

ABSTRACT

A method and control system for forming workpiece surfaces with at least a portion being non-rotationally symmetric (i.e., axis asymmetric) is provided. In one aspect, a slow tool servo system is provided to fabricate a surface having at least an axis asymmetric portion, and optionally, a superimposed axis symmetric asphere or spherical portion. A workpiece is mounted on a spindle and a tool is mounted to a translatable tabletop surface. The z position of the contact point of the workpiece and working tool is determined as a function of the x position of the same contact point and as a function of the angle of rotation of the spindle about the spindle axis. By making the z position of the contact point a function of both the angle of spindle rotation and the x position, the lateral and longitudinal position of the working tool can be moved at designated spindle rotation angles to form a surface having both axis asymmetric and axis symmetric asphere or spherical portions.